

## Sixth Semester B.E. Degree Examination, Aug./Sept.2020

## **Mechatronics and Microprocessor**

Time: 3 hrs. Max. Marks: 100

Note: Answer any FIVE full questions, selecting at least TWO questions from each part.

## PART – A

- 1 a. Define mechatronics. Briefly explain various evolution stages of mechatronics. (10 Marks)
  - b. Explain with a block diagram the working of Engine Management System. (10 Marks)
- 2 a. Define transducer. Explain primary and secondary transducers with examples. (10 Marks)
- b. What is Hall effect? Explain the working of Hall effect sensors with a neat sketch. (10 Marks)
- What are solid state switches? Explain with neat diagram four important solid state switches.
   (10 Marks)
  - b. Explain the working principle of a permanent magnet DC motor with a schematic diagram.
    (10 Marks)
- 4 a. What is the significance of Operational Amplifier? How it is used in an non-inverting amplifier? (10 Marks)
  - b. Explain Multiplexer and digital signal processing with block diagram and modulation respectively. (10 Marks)

## PART - B

- 5 a. Explain with block diagram the general form of microprocessor system. (10 Marks)
  - b. What are logic gates? Discuss AND and OR gates with their truth table for two inputs.

(10 Marks)

- 6 a. Explain 8085A microprocessor architecture with a block diagram. (10 Marks)
  - b. What are microcontrollers? Explain the general form of microcontroller. (10 Marks)
- 7 a. What are the types of registers used in 8085 microprocessor? Explain with a block diagram.

(10 Marks)

- b. With a neat flow chart, discuss the programming process. (10 Marks)
- 8 a. Distinguish between Instruction cycle, machine cycle and T-state. (10 Marks)
  - b. Draw and explain the timing diagram for opcode fetch operation. (10 Marks)

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